

Monte Carlo mini-App — Main Computational Steps



The computation is broken into these separable steps each with its own data needs and memory footprints:

- 1. Source:** generate random packets
(*position, direction, energy, type, weight...*)

| | | | | | | |
|---|----|----|----|----|----|----|
| 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 4 | 9 | 14 | 19 | 24 | 29 | 34 |
| 3 | 8 | 13 | 18 | 23 | 28 | 33 |
| 2 | 7 | 12 | 17 | 22 | 27 | 32 |
| 1 | 6 | 11 | 16 | 21 | 26 | 31 |

- 2. Ray Trace:** trace packets through the geometry
 - To determine geometry elements intersected

- 3. Path Length:** calculate path lengths in each intersected element
 - Path length is the fundamental quantity to be scored



- 4. Attenuation:** reduce the weight along the track

$$w_{i+1} = w_i e^{-ds/\lambda}$$

- 5. Kinematics:** spawn secondary packets



- 6. Accumulate:** score results of interest
(*flux, image, secondaries...*)